

Notice of Allowability

Application No.

10/665,341

Examiner

Craig A. Renner

Applicant(s)

DENG ET AL.

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to paper(s) filed 13 March 2006.
2. ☒ The allowed claim(s) is/are 2,7-10,12,13,15 and 17-20 (renumbered 1-12, respectively).
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

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1. The drawings were received on 13 March 2006. These drawings are accepted.

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Lawrence E. Ashery on 30 March 2006.

3. The application has been amended as follows:

IN THE TITLE:

The title has been amended to read as follows:

--FLYING HEAD SLIDER WITH AIR BEARING STEP FACE ARRANGEMENT--.

IN THE CLAIMS:

The claim listing has been amended to read as follows:

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1. (Cancelled).
2. (Currently Amended) A flying head slider comprising:
a first air bearing having a plurality of step-faces and being disposed on a base surface at an air inflow side; and
a second air bearing being disposed on the base surface at an air outflow side, wherein an upper most surface of said second air bearing is lower than an upper most surface of said first air bearing, and
wherein ~~each~~ of the plurality of step-faces includes:
a first step-face;
a second step-face higher than the first step-face; and
the upper most surface of the first air bearing higher than the second step-face, in this order from the air inflow side.

3-6. (Cancelled).

7. (Original) The flying head slider of claim 2, wherein a height difference LA between the upper most surface of the first air bearing and the base surface falls within $3.2 \times 10^{-4} L \leq LA \leq 3.6 \times 10^{-4} L$, where L is a length of a longer side of the flying head slider.

8. (Original) The flying head slider of claim 7, wherein a height difference L_2 between the upper most surface of the first air bearing and the second step-face of the first air bearing falls within $2.9 \times 10^{-2} LA \leq L_2 \leq 3.3 \times 10^{-2} LA$.

9. (Original) The flying head slider of claim 7, wherein a height difference L_1 between the first step-face of the first air bearing and the second step-face of the first air bearing falls within $13.4 \times 10^{-2} LA \leq L_1 \leq 14.5 \times 10^{-2} LA$.

10. (Original) The flying head slider of claim 8, wherein a height difference L_1 between the first step-face of the first air bearing and the second step-face of the first air bearing falls within $13.4 \times 10^{-2} LA \leq L_1 \leq 14.5 \times 10^{-2} LA$.

11. (Cancelled).

12. (Original) The flying head slider of claim 2, wherein said second air bearing includes a plurality of step-faces.

13. (Currently Amended) The flying head slider of claim 12, wherein the plurality of step-faces of said second air bearing includes a further step-face formed higher than the base surface and ~~a upper most surface~~ the upper most surface of the second air bearing formed higher than the further step-face in this order from the air inflow side.

14. (Cancelled).

15. (Previously Presented) The flying head slider of claim 13, wherein the first step-face of said first air bearing is as high as the further step-face of said second air bearing.

16. (Cancelled).

17. (Currently Amended) A head supporting device comprising:
a flying head slider comprising a first air bearing having a plurality of step-faces and being disposed on a base surface at an air inflow side and a second air bearing having a head and being disposed on the base surface at an air outflow side; and
a suspension for applying a given energizing force to the flying head slider from a side opposite to a side on which the first air bearing and the second air bearing are disposed on the base surface,

wherein an upper most surface of said second air bearing is lower than an upper most surface of said first air bearing, and

wherein ~~each~~ of the plurality of step-faces includes:

a first step-face;

a second step-face higher than the first step-face; and

the upper most surface of the first air bearing higher than the second step-face, in this order from the air inflow side.

18. (Original) The head supporting device of claim 17, wherein the suspension includes a pivot that applies the given energizing force to the flying head slider.

19. (Currently Amended) A disc driving device comprising:
a flying head slider comprising a first air bearing having a plurality of step-faces and being disposed on a base surface at an air inflow side and a second air bearing having a head and being disposed on the base surface at an air outflow side;
a suspension for applying a given energizing force to the flying head slider from a side opposite to a side on which the first air bearing and the second air bearing are disposed on the base surface;
a disc-shaped recording medium;
driving means for driving the disc-shaped recording medium;
swinging means for swinging the suspension along a radius direction of the recording medium; and
control means for controlling the drive by the driving means and the swing by the swinging means,
wherein an upper most surface of said second air bearing is lower than an upper most surface of said first air bearing, and

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wherein ~~each~~ of the plurality of step-faces includes:

a first step-face;

a second step-face higher than the first step-face; and

the upper most surface of the first air bearing higher than the second step-face,

in this order from the air inflow side.

20. (Original) The disc driving device of claim 19,

wherein the suspension includes a pivot that applies the given energizing force to the flying head slider, and

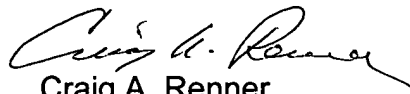
wherein a pivot place is defined as a place where the pivot of the suspension contacts the flying head slider and when a center of gravity of the head slider and the pivot place are projected onto a face of the disc, the two projected places coincide with each other.

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4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is (571) 272-7580. The examiner can normally be reached on Tuesday-Friday 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Craig A. Renner
Primary Examiner
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CAR